

AD-A066 587

NAVAL OCEAN SYSTEMS CENTER SAN DIEGO CA
HIGH PERFORMANCE WHEELCHAIR CHASSIS: ENGINEERING DRAWINGS.(U)
JAN 79 R A GARRETT, J P WIER
NOSC/TD-218

F/G 6/17

UNCLASSIFIED

NL

/ OF /

AD
A066587



END

DATE
FILMED

5-79

DDC

12
LEVEL II

NOSC

AD A0 66587

NOSC TD 218

Technical Document 218

HIGH PERFORMANCE WHEELCHAIR CHASSIS: ENGINEERING DRAWINGS

RA Garrett
JP Wier

4 January 1979

Final Report: 17 June 1976 to 15 December 1978

Prepared for
Veterans Administration
Prosthetics Center

DDC
RECEIVED
MAR 30 1979
RECEIVED

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

NAVAL OCEAN SYSTEMS CENTER
SAN DIEGO, CALIFORNIA 92152

79 03 26 007

DDC FILE COPY



RR GAVAZZI, CAPT USN

Commander

HL BLOOD

Technical Director

ADMINISTRATIVE INFORMATION

The work reported in this document was sponsored by the Veterans Administration Prosthetics Center and was performed under NOSC Work Unit CE09. The document was reviewed by WT Rasmussen.

Released by
J Silva, Head
Man-System Interaction Division

Under authority of
JH Maynard, Head
Command Control – Electronic Warfare
Systems and Technology Department

ACCESSION for		
NTIS	White Section	<input checked="" type="checkbox"/>
DOC	Buff Section	<input type="checkbox"/>
UNANNOUNCED		<input type="checkbox"/>
JUSTIFICATION _____		
BY _____		
DISTRIBUTION/AVAILABILITY CODES		
Dist.	ANAL. DIV.	SPECIAL
A		

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER NOSC Technical Document 218 (TD 218)	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) HIGH PERFORMANCE WHEELCHAIR CHASSIS: ENGINEERING DRAWINGS.	5. TYPE OF REPORT & PERIOD COVERED Final Report 17 June 1976 to 15 December 1978	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) RA Garrett JP Wier	8. CONTRACT OR GRANT NUMBER(s)	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS CE09
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Ocean Systems Center San Diego, CA 92152	11. CONTROLLING OFFICE NAME AND ADDRESS Veterans Administration Prosthetics Center New York, NY 10001	12. REPORT DATE 4 January 1979
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) NOSC/TD-218	13. NUMBER OF PAGES 38	15. SECURITY CLASS. (of this report) UNCLASSIFIED
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Bioengineering Prosthetic devices		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The wheelchair chassis described in this report is the second part of a three-phase plan to develop an integrated transportation system for paraplegics.		

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

[A large rectangular box, likely a redaction or placeholder for content, occupies the central portion of the page. It contains faint, illegible markings and a small checkmark in the upper left quadrant.]

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

CONTENTS

DISCUSSION . . . page 3

DRAWINGS

HPWC Assembly Drawing	HPWC001 . . . page 5
Weld Assembly Detail	0102842 . . . 6
Spindle Front Wheel	0102822 . . . 7
Arm, Swing	0102823 . . . 8
Bracket, Suspension	0102824 . . . 9
Arms, Front Suspension	0102825 . . . 10
Box, Battery	0102826 . . . 11
Lids, Box	0102827 . . . 12
Plate, Axle Mount	0102828 . . . 13
Hub, Sheave	0102829 . . . 14
Adapter, Pulley	0102830 . . . 15
Pulley, Cogged	0102831 . . . 16
Gear, Splined	0102832 . . . 17
Axle, Flanged	0102833 . . . 18
Spacer, Bearing	0102834 . . . 19
Hinge, Swing Arm	0102835 . . . 20
Axle, Swing Arm	0102836 . . . 21
Rod, Suspension	0102837 . . . 22
Stop, Suspension	0102838 . . . 23
Plate, Motor Mount	0102839 . . . 24
Pulley, Small Cogged	0102840 . . . 25
Block, Spindle Mount	0102841 . . . 26
Rack, Alignment	0102851 . . . 27
Cradle, Motor	0102852 . . . 28
Standoffs	0102853 . . . 29
HPWC Mating Hardware Assembly	0103958 . . . 30
Lifting Rail Upper	0103959 . . . 31
Lifting Rail Lower	0103960 . . . 32
Connector Track	0103961 . . . 33
Bearing, Connector	0103962 . . . 34
Collar Connector	0103963 . . . 35
Pivot Bracket	0103964 . . . 36
Pivot Pin, Connector	0103965 . . . 37

ILLUSTRATION

1 Integrated transportation system for paraplegics . . . page 3

79 103 26 007

DISCUSSION

The High Performance Wheelchair Chassis is one part of a three-phase plan to develop an Integrated Transportation System for Paraplegics. The development of the system is sponsored by the Veterans Administration Prosthetics Center (VAPC) and is a cooperative effort of the VAPC and the Naval Ocean Systems Center (NOSC).

Phase I consisted of the design and fabrication of a prototype ambulator; Phase II is a wheelchair chassis which accepts the ambulator to form the ambulator/wheelchair subsystem; and Phase III is a street vehicle designed to functionally accommodate the integrated ambulator/wheelchair subsystem. (See figure 1.)

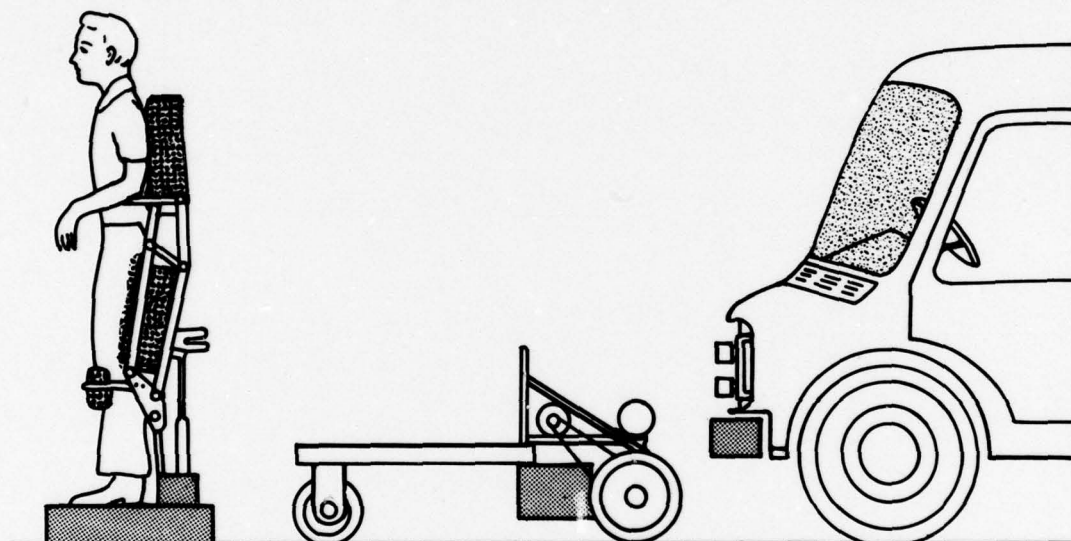


Figure 1. Integrated transportation system for paraplegics.

The ambulator/wheelchair subsystem consists of two modules that can separate to provide increased mobility while the paraplegic is supported in the upright position. The ambulator contains an erecting mechanism powered by an electric-motor-driven jackscrew fixed to a small, stable platform that provides a paraplegic with the capability of being raised into a fully erect position, and allows the ambulator to be detached from the wheelchair mainframe. The occupant can then move away from the wheelchair and move about under his own control. For a more detailed description of the ambulator mechanism see NOSC Technical Document 208.¹

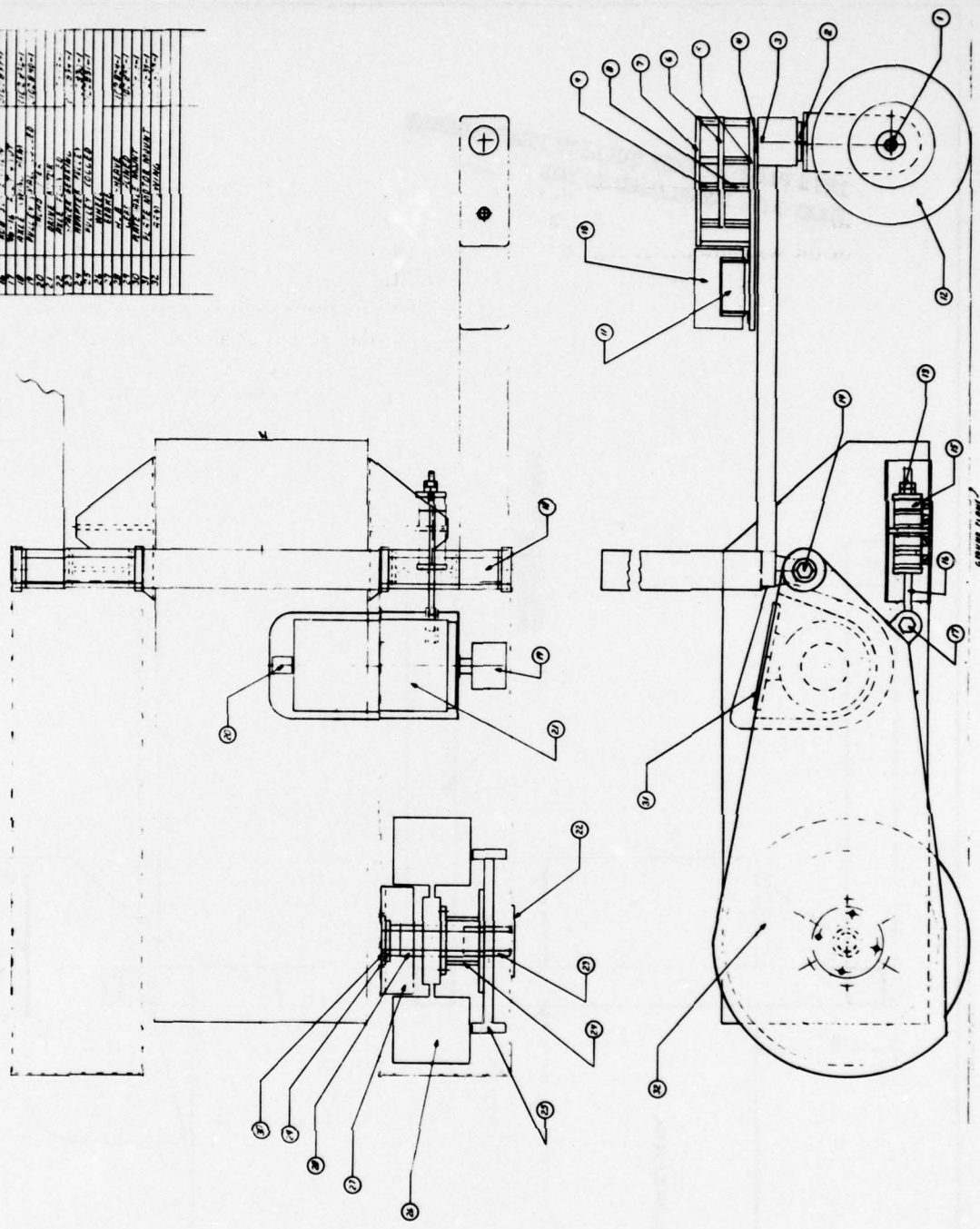
¹NOSC TD 208, Ambulator for Paraplegics: Engineering Drawings, by RA Garrett and J Weir, 1 November 1978.

In addition to providing the paraplegic with the capability to stand or sit at will, it is felt that the ambulator/wheelchair subsystem will provide better general health for the person. It allows the patient to load his skeleton periodically, providing bone stress needed to reduce calcium washout, a condition resulting in a loss of calcium, especially in the bones of the legs and pelvic region. Standing improves circulation, and relieves pressure areas which lead to tissue breakdown and decubiti. It also enables easier living in a stand-up world and makes possible seemingly routine functions such as cooking at a stove or working at a sink or workbench. These kinds of everyday activities are, at best, difficult and often impossible tasks to perform in a conventional wheelchair. The psychological benefit of conversing with someone at an eye-to-eye level may be the greatest benefit of all, and should prove to be a significant morale booster.



1. ALL BOLTS & NUTS ARE TO BE STAINLESS STEEL.
 2. THE FRAME UNIT MUST BE DRILLED AND TAPPED
 TO THE 1/2" DIA. 1/2" DEEP.
 3. LUBRICATE WHEELS PRIOR TO ASSEMBLY.
 4. SEE ASSEMBLY PROCEDURE FOR WHEEL-SPARE ASSEMBLY.

ITEM	DESCRIPTION	DRAWING NO.
1	FRAME UNIT	100-100-100
2	WHEEL	100-100-100
3	WHEEL	100-100-100
4	WHEEL	100-100-100
5	WHEEL	100-100-100
6	WHEEL	100-100-100
7	WHEEL	100-100-100
8	WHEEL	100-100-100
9	WHEEL	100-100-100
10	WHEEL	100-100-100
11	WHEEL	100-100-100
12	WHEEL	100-100-100
13	WHEEL	100-100-100
14	WHEEL	100-100-100
15	WHEEL	100-100-100
16	WHEEL	100-100-100
17	WHEEL	100-100-100
18	WHEEL	100-100-100
19	WHEEL	100-100-100
20	WHEEL	100-100-100
21	WHEEL	100-100-100
22	WHEEL	100-100-100
23	WHEEL	100-100-100
24	WHEEL	100-100-100
25	WHEEL	100-100-100
26	WHEEL	100-100-100
27	WHEEL	100-100-100
28	WHEEL	100-100-100
29	WHEEL	100-100-100
30	WHEEL	100-100-100
31	WHEEL	100-100-100
32	WHEEL	100-100-100
33	WHEEL	100-100-100
34	WHEEL	100-100-100
35	WHEEL	100-100-100
36	WHEEL	100-100-100
37	WHEEL	100-100-100
38	WHEEL	100-100-100
39	WHEEL	100-100-100
40	WHEEL	100-100-100
41	WHEEL	100-100-100
42	WHEEL	100-100-100
43	WHEEL	100-100-100
44	WHEEL	100-100-100
45	WHEEL	100-100-100
46	WHEEL	100-100-100
47	WHEEL	100-100-100
48	WHEEL	100-100-100
49	WHEEL	100-100-100
50	WHEEL	100-100-100



THIS PAGE IS BEST QUALITY PRACTICABLE
 FROM COPY FURNISHED TO DDC

H.P.W.C. ASSEMBLY DWG.
 PROJECT NO. 100-100-100
 DRAWN: J. WILF
 5-11-78
 R.P.W.C. 001

7250

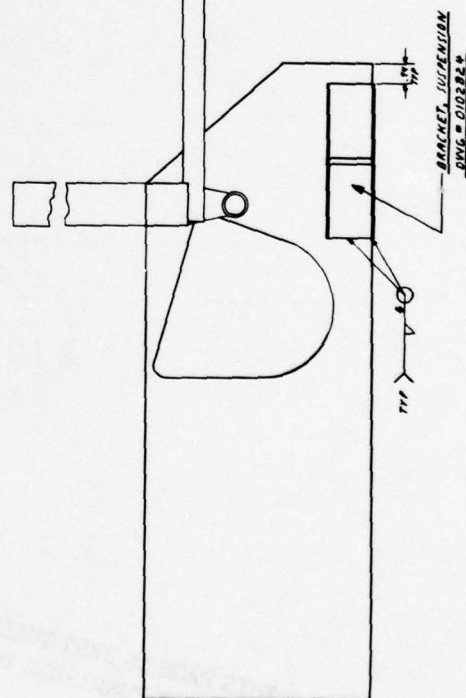
7100

7250

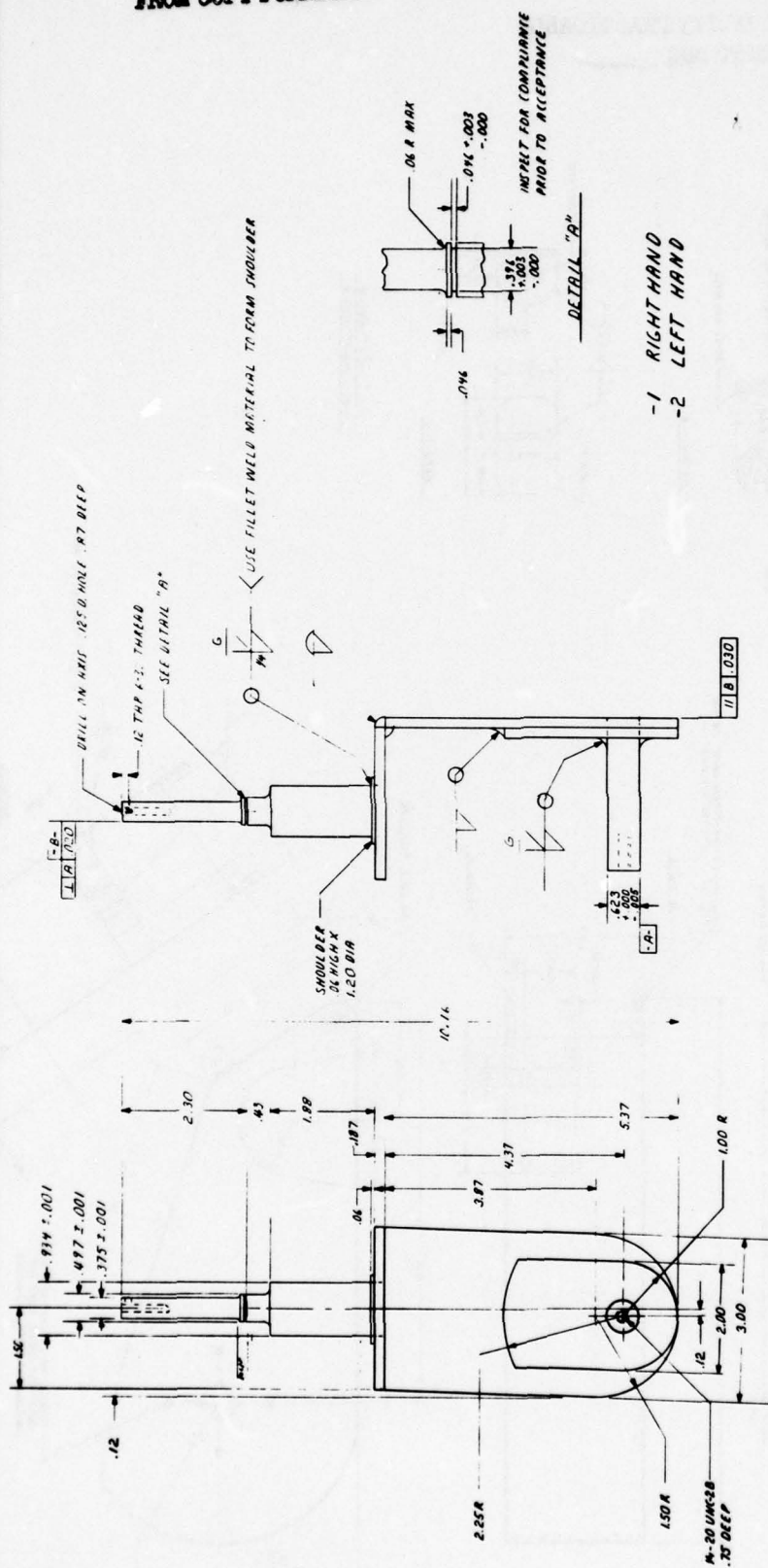
7100

BOX BATTERY

ARMS FRONT

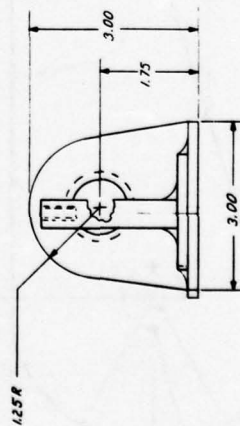
[illegible]

THIS PAGE IS BEST QUALITY PRACTICABLE
FROM COPY FURNISHED TO DDC



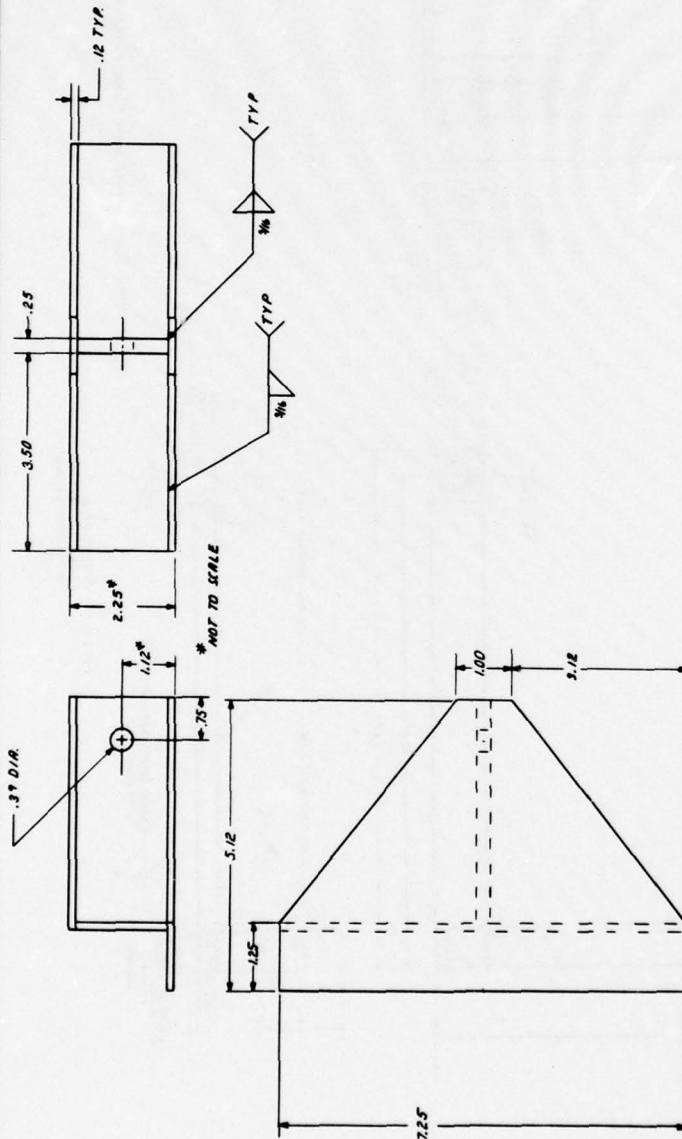
-1 RIGHT HAND
-2 LEFT HAND

MATERIAL: T-1 LOW CARBON ALLOY STEEL 1/8" THICK PLT. OR EQUAL
AISI 4140 { 4130 }
(AS AVAILABLE)

[illegible]

[illegible]

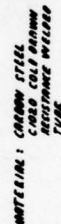
THIS PAGE IS BEST QUALITY PRACTICABLE
FROM COPY FURNISHED TO DDC



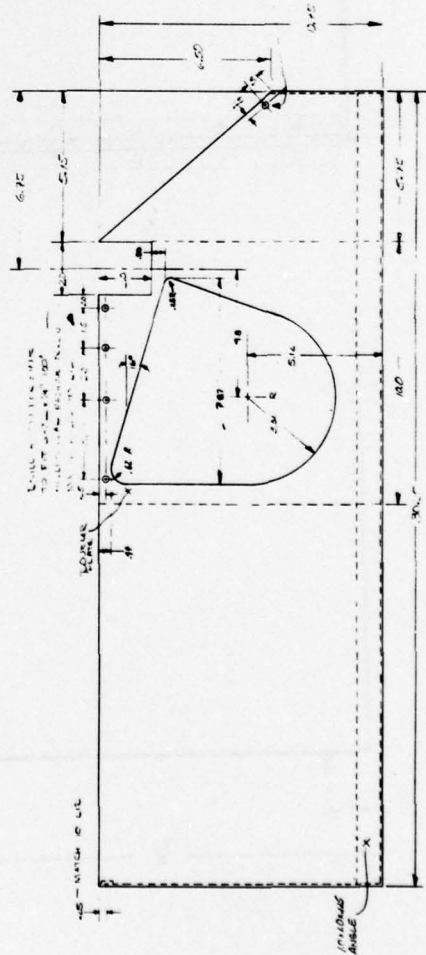
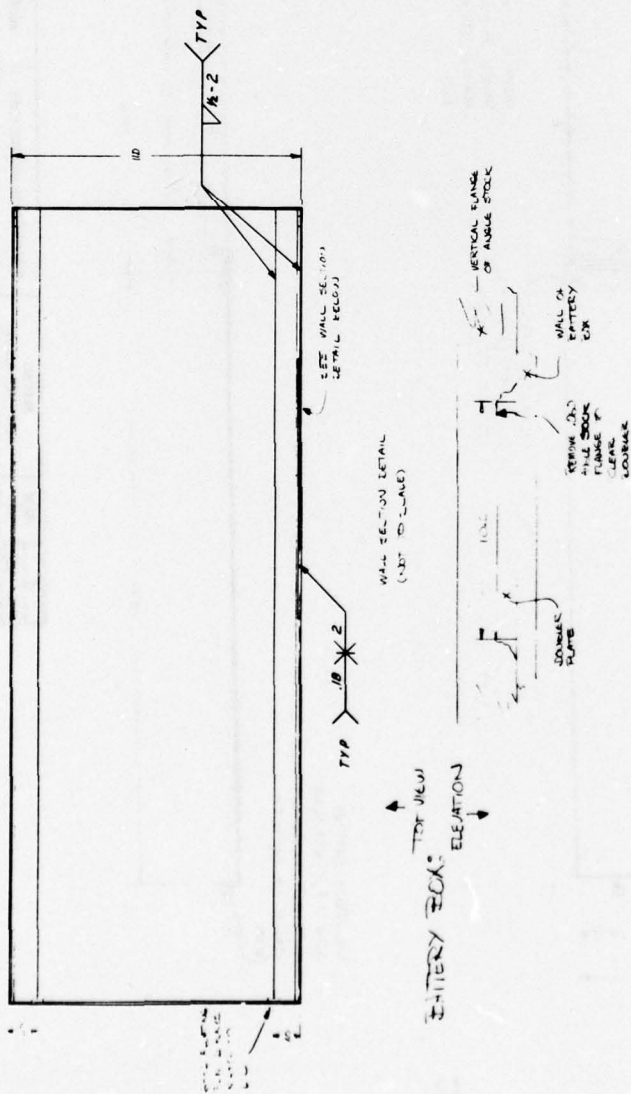
MATERIAL: CARBON STEEL

QTY	REV	DATE	DESCRIPTION	APPROVED BY	DATE
<p>BRACKET, SUSPENSION</p> <p>NAVY, OCEAN SYSTEMS CENTER SAN DIEGO, CA 92162</p> <p>0102 B2 4 - 1</p>					
<p>0102 B2 4 - 1</p> <p>0102 B2 4 - 1</p> <p>0102 B2 4 - 1</p>					

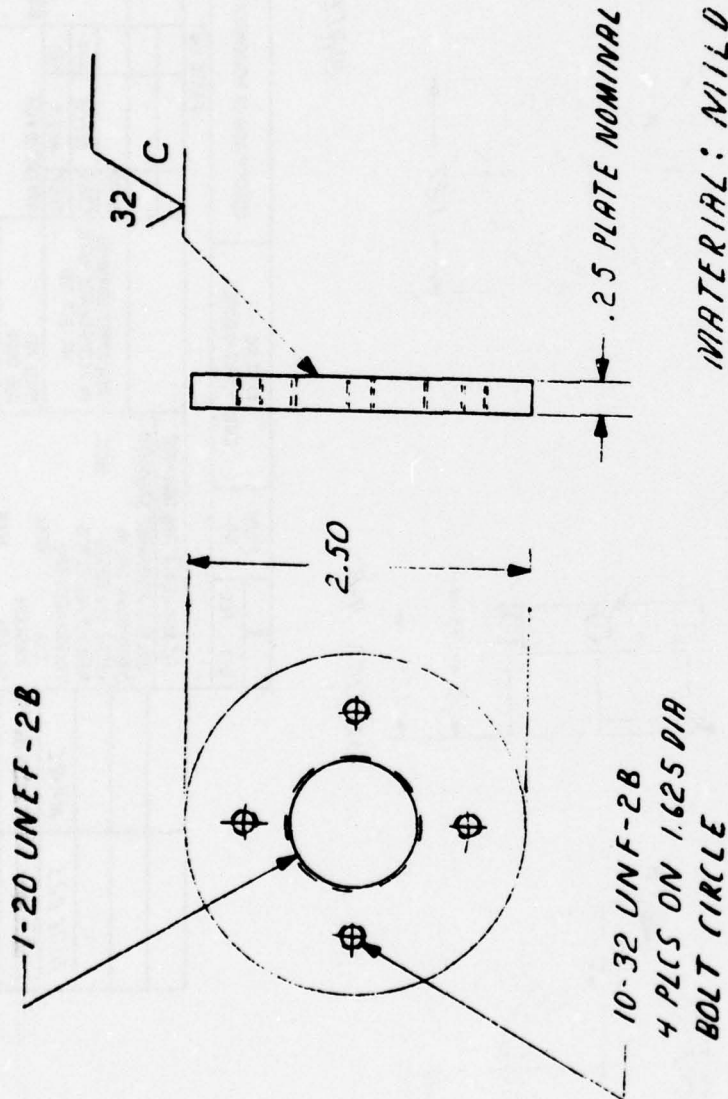
SEE DETAIL "HINGE SWING ARM" DWG # 010203F

10

THIS PAGE IS BEST QUALITY PRACTICABLE
FROM COPY FURNISHED TO DDG

[illegible]

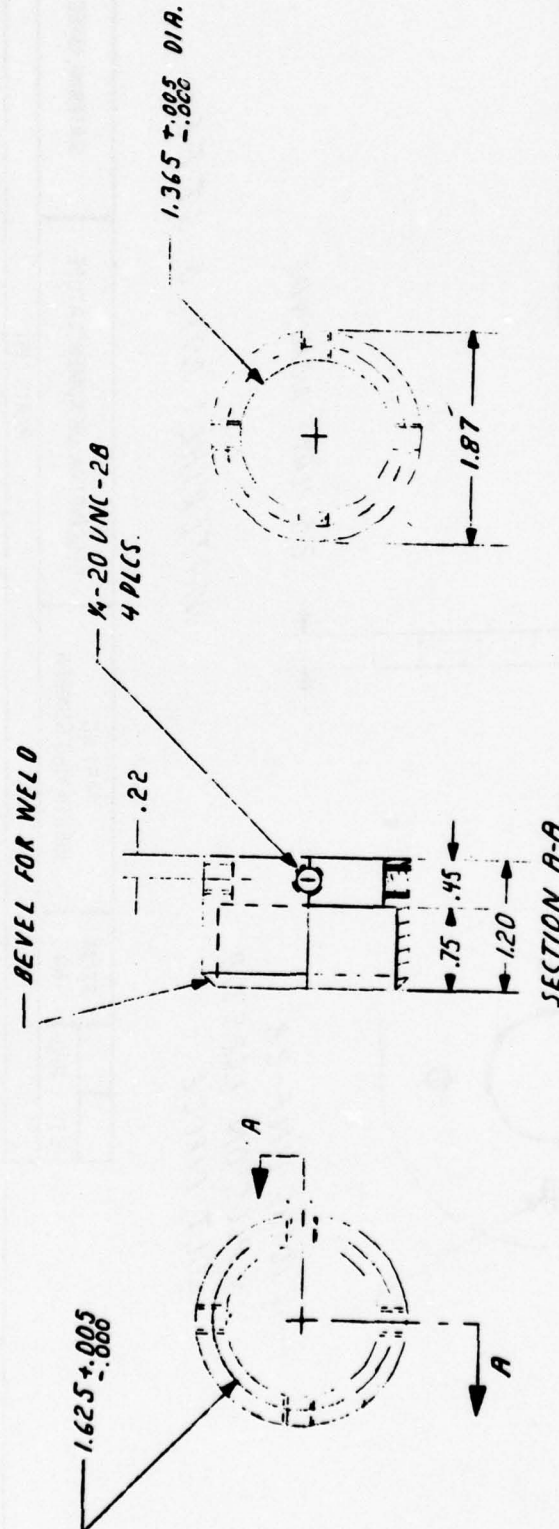
THIS PAGE IS BEST QUALITY PRACTICABLE
FROM COPY FURNISHED TO DDC



QTY		FSCM NO.	PART NO. IDENTIFYING NUMBER	DESCRIPTION OR NOMENCLATURE	MATERIAL/SPEC/REF DESG	ITEM NO.
PARTS LIST						
DO NOT SCALE THIS DRAWING UNLESS OTHERWISE SPECIFIED			NAVAL OCEAN SYSTEMS CENTER SAN DIEGO, CA. 92152			
DIMENSIONS ARE IN BREAK ALL EDGES REMOVE ALL BURRS TOLERANCES ARE XX± .XX± MAX.			PLATE AXLE MOUNT			
D102 823 HPWC			SIZE FSCM NUMBER DRAWING NUMBER			
NEXT ASSY USED ON			55910 0102 828-1			
APPLICATION			SCALE 1:1 UNIT WT. SHEET 1 OF 1			

THIS PAGE IS BEST QUALITY PRACTICABLE
FROM COPY FURNISHED TO DDG

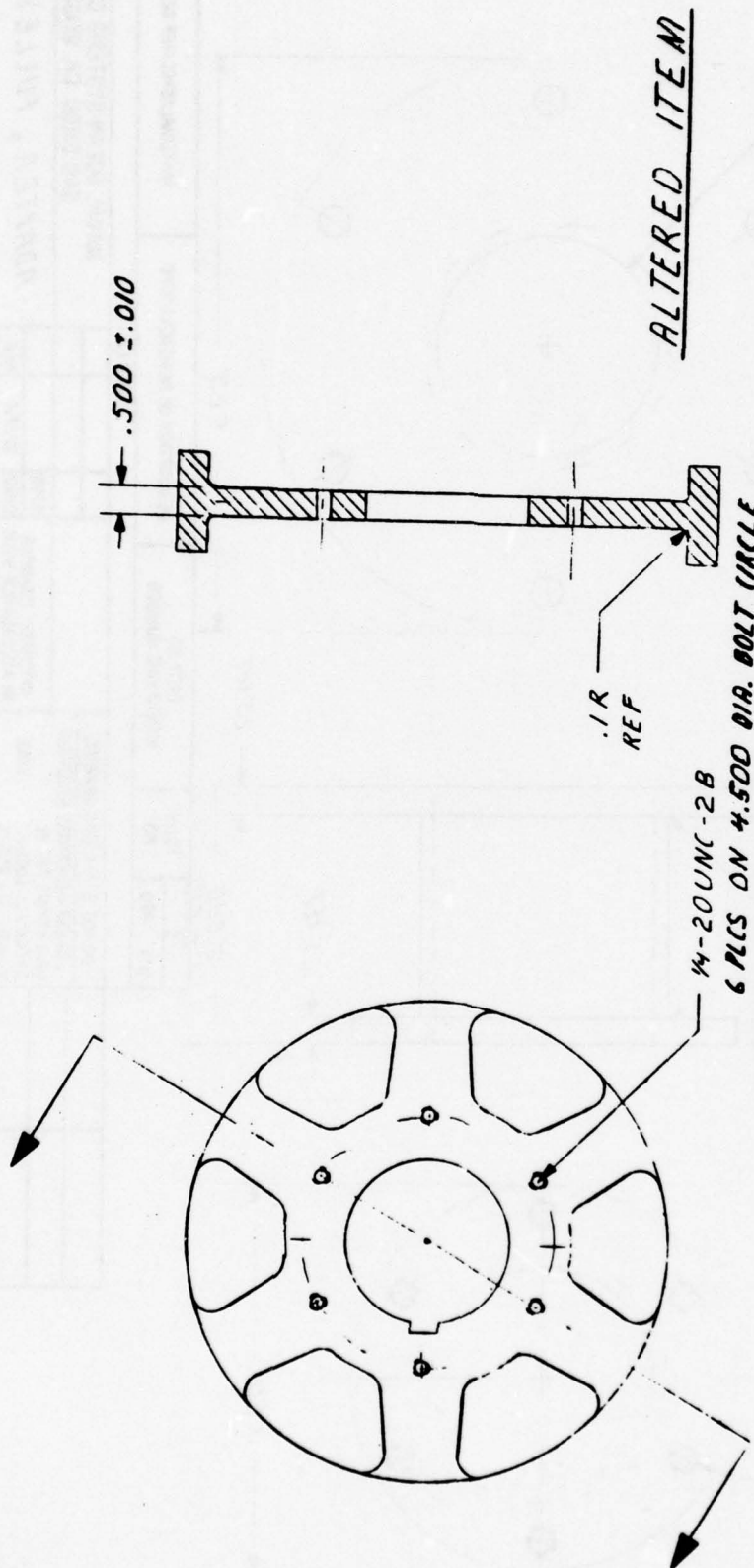
NOTE: PART TO BE WELDED TO WHEEL HUB
OPPOSITE SIDE FROM VALVE STEM.



MATERIAL: MILD STEEL

QTY REQ		FSCM NO.	PART NO IDENTIFYING NUMBER	DESCRIPTION OR NOMENCLATURE	MATERIAL/SPEC/REF DESG	ITEM NO.
					NAVAL OCEAN SYSTEMS CENTER SAN DIEGO, CA. 92152	
					HUB, SHEAVE	
					APVD CHKD PREP APPROVED FOR	
					INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100	
					PROJ NO COS CODE REL DATE	
					BY DIRECTION	
					SCALE: 1:1	
					UNIT WT.	
					DRAWING NUMBER 55910	
					0102829-1	
					SHEET 1 OF 1	

THIS PAGE IS BEST QUALITY PRACTICABLE
FROM COPY FURNISHED TO DDC

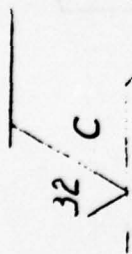


QTY REQ		FSCM NO.	PART NO IDENTIFYING NUMBER	DESCRIPTION OR NOMENCLATURE	MATERIAL/SPEC/REF DESG	ITEM NO.
				NAVAL OCEAN SYSTEMS CENTER SAN DIEGO, CA. 92152		
				PULLEY COGGED		
				APVD		
				CHKD W/E R 11/70		
				PREP W/E R 11/70		
				APPROVED FOR		
				PROJ. NO. 102 9821A01		
				COG CODE P2-33		
				REL DATE		
				BY DIRECTION		
				SCALE 1:2	UNIT WT.	SHEET 1 OF 1

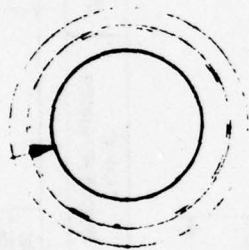
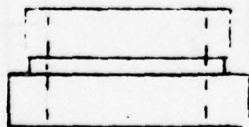
DO NOT SCALE THIS DRAWING UNLESS OTHERWISE SPECIFIED:	
DIMENSIONS ARE IN	MAX.
BREAK ALL EDGES	
REMOVE ALL BURRS	
TOLERANCES ARE:	
.XXS	
ANGLES:	MAX.
FILLETS	
SURFACE ROUGHNESS	

APPLICATION	
0102 823	HPWC
NEXT ASSY	USED ON

THIS PAGE IS BEST QUALITY PRACTICABLE
FROM COPY FURNISHED TO DDC



1.06 DIA



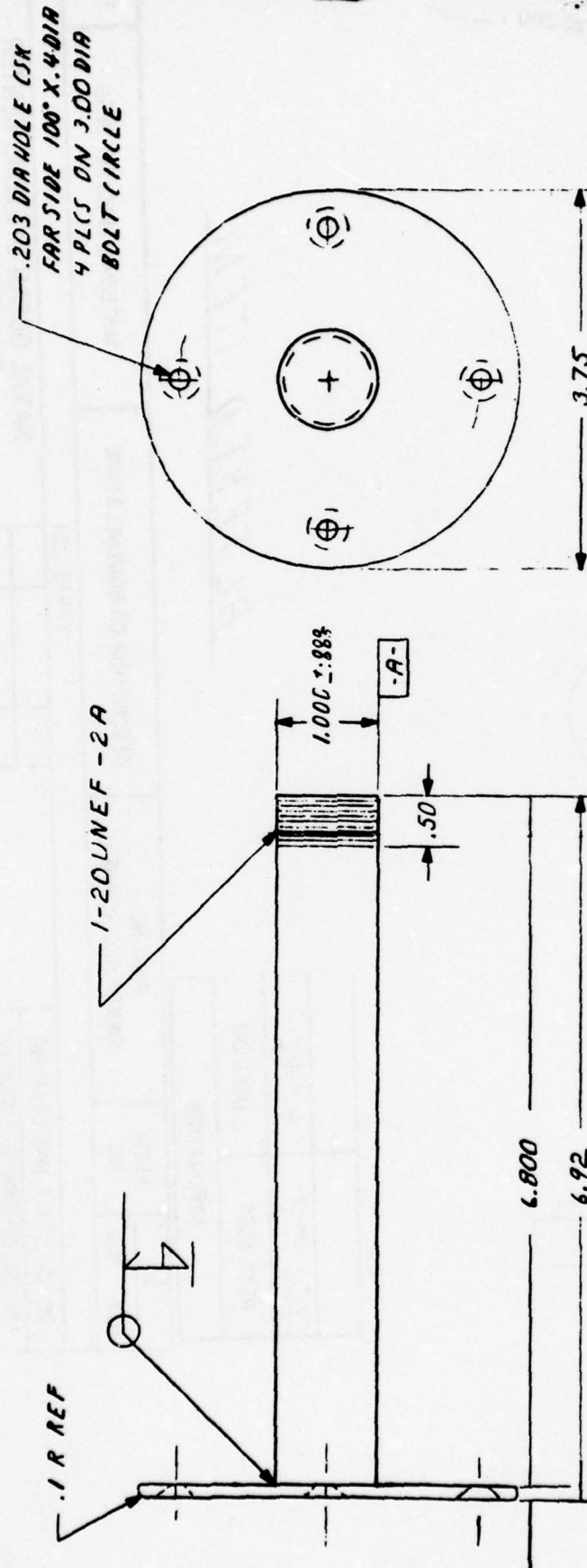
QIC2 823		HPWL
NEXT ASSY		USED ON
APPLICATION		

ALTERED ITEM

QTY REQ		FSCM NO.	PART NO. IDENTIFYING NUMBER	DESCRIPTION OR NOMENCLATURE	MATERIAL/SPEC/REF DESG	ITEM NO.
DO NOT SCALE THIS DRAWING UNLESS OTHERWISE SPECIFIED:		PARTS LIST				
DIMENSIONS ARE IN MAX.		NAVAL OCEAN SYSTEMS CENTER SAN DIEGO, CA. 92152				
BREAK ALL EDGES MAX.		GEAR, SPLINED				
REMOVE ALL BURRS		APVD				
TOLERANCES ARE:		CHKD WIER 4/10				
XXX2		PREP WIER 4/10				
ANGLES:		APPROVED FOR		SIZE	FSCM NUMBER	DRAWING NUMBER
FILLET		PROJ. NO 020 822 & 823			55910	0102832-1
SURFACE ROUGHNESS		COG CODE 8233		SCALE 1:1	UNIT WT	SHEET 1 OF 1
		REL DATE				

THIS PAGE IS BEST QUALITY PRACTICABLE
FROM COPY FURNISHED TO DDC

MATERIAL : 303 STAINLESS

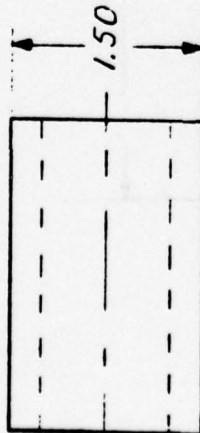
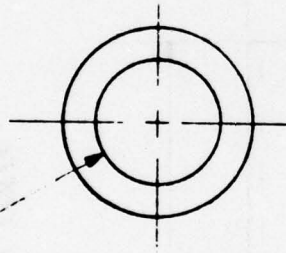


QTY		FSCM NO.	PART NO. IDENTIFYING NUMBER	DESCRIPTION OR NOMENCLATURE	MATERIAL/SPEC/REF DESG	ITEM NO.
DO NOT SCALE THIS DRAWING UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN BREAK ALL EDGES REMOVE ALL BURRS TOLERANCES ARE: .XXs ANGLES: .XXs MAX. SURFACE ROUGHNESS		INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100		NAVAL OCEAN SYSTEMS CENTER SAN DIEGO, CA. 92152		
D102823 HPWC		APPROVED FOR		AXLE, FLANGED		
NEXT ASSY USED ON		PROJ NO (C0902640) C0G CODE B233		SIZE FSCM NUMBER DRAWING NUMBER		
APPLICATION		REL DATE		55910 D102833-1		
		BY DIRECTION		SCALE 1:1 UNIT WT.		SHEET 1 OF 1

LA .030

THIS PAGE IS BEST QUALITY PRACTICABLE
FROM COPY FURNISHED TO DDC

1.006 $\pm .005$
- .000



2.44

1.50

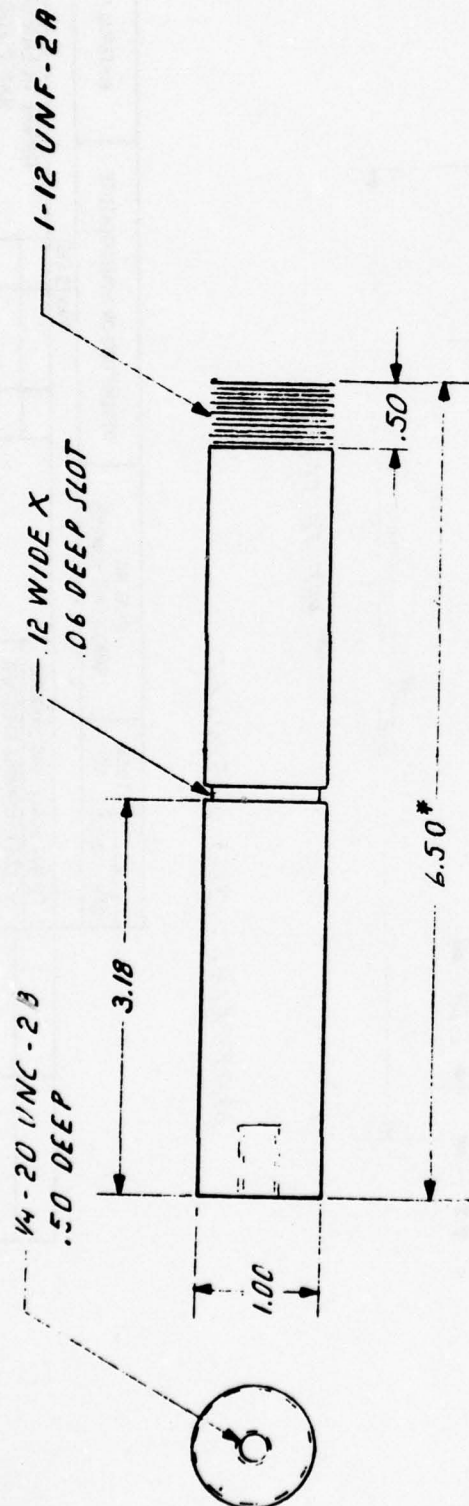
MATERIAL: BEARING BRONZE

QTY REQ		FSCM NO	PART NO IDENTIFYING NUMBER	DESCRIPTION OR NOMENCLATURE	MATERIAL / SPEC / REF DESG	ITEM NO
DO NOT SCALE THIS DRAWING UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN BREAK ALL EDGES REMOVE ALL BURRS TOLERANCES ARE XX ₂ ANGLES ₂ FILLETS SURFACE ROUGHNESS		INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100		APVD CHKD PREP	NAVAL OCEAN SYSTEMS CENTER SAN DIEGO, CA. 92152	SPACER, BEARING
MAX.		APPROVED FOR		SIZE	FSCM NUMBER	
XXX ₂		PROJ NO (E2922401)		55910	DRAWING NUMBER	
MAX.		COG CODE B233		0102834-1		
APPLICATION		REL DATE		BY DIRECTION	SCALE 1:1	SHEET 1 OF 1
NEXT ASSY		USED ON				
0102823		HPWC				

[illegible]

		FSCM NO.	PART NO. IDENTIFYING NUMBER	DESCRIPTION OR NOMENCLATURE	MATERIAL / SPEC / REF DESG	ITEM NO.
CITY	REQ					
PARTS LIST						
DO NOT SCALE THIS DRAWING UNLESS OTHERWISE SPECIFIED:						
DIMENSIONS ARE IN INCHES ALL EDGES REMOVE ALL BURNS TOLERANCES ARE: X16 .XXSx ANGLESx MAX. PILLETSSURFACE ROUGHNESS						
0102 P.05 H.P.W.C			INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-883C			
NEXT ASSY	USED ON	APPROVED FOR				
APPLICATION		BY DIRECTION				
		SCALE 1/1 UNIT WT.				
		DRAWING NUMBER				
		55910 0102B35-1				
		NAVAL OCEAN SYSTEMS CENTER SAN DIEGO, CA. 92152				
		HINGE, SWING ARM				
		SIZE FSCM NUMBER				
		UNIT WT.				
		SHEET 1 OF 1				

THIS PAGE IS BEST QUALITY PRACTICABLE
FROM COPY FURNISHED TO DDG



MATERIAL : 303 STAINLESS

QTY		FSCM NO.	PART NO. IDENTIFYING NUMBER	DESCRIPTION OR NOMENCLATURE	MATERIAL/SPEC/REF DESG	ITEM NO.
				APPROVED FOR	NAVAL OCEAN SYSTEMS CENTER SAN DIEGO, CA. 92152	
				INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100	AXLE, SWING ARM	
				PROJ. NO. 7277926AD/		
				COG CODE #233		
				REL DATE		
				DO NOT SCALE THIS DRAWING UNLESS OTHERWISE SPECIFIED:		
				DIMENSIONS ARE IN MAX.		
				REMOVE ALL BURRS		
				TOLERANCES ARE:		
				XXS XXS		
				ANGLES: MAX.		
				FILLETS		
				SURFACE ROUGHNESS		
0102825				HPWC		
NEXT ASSY				USED ON		
APPLICATION						
				APPROVED FOR		
				BY DIRECTION		
				SCALE: 1/1		
				UNIT WT.		
				SHEET 1 OF 1		

11ND NOSC 281008 (11-77)

Technical drawing of a mechanical part, likely a shaft or rod, showing dimensions and features:

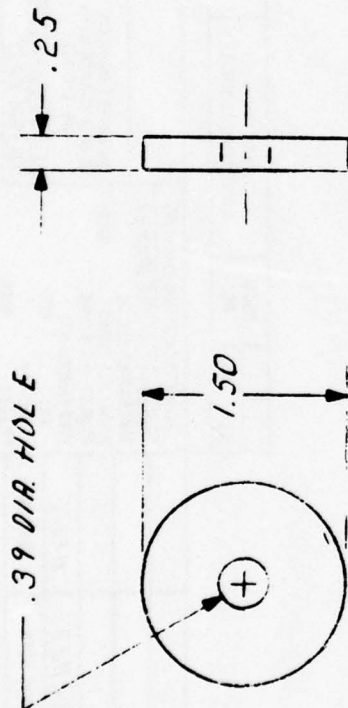
- Top View:** A circle with a central rectangular hole. The hole has a width of 1.50 .
- Front View:** A horizontal rectangle representing the shaft. The total length is 8.25^* . The distance from the left end to the center of the hole is 4.4 . The distance from the center of the hole to the right end is 3.80^* . The diameter of the hole is $.38 \text{ DIA.}$.
- Section View:** A cross-section of the shaft showing a rectangular hole with a width of $.36$. The distance from the left end to the center of the hole is $.25$.
- Threaded Section:** A section of the shaft with a threaded hole. The thread specification is $\frac{3}{8}-24 \text{ UNF}-2A$. The distance from the left end to the start of the thread is 1.5 . The distance from the start of the thread to the right end is $.375$.

MATERIAL: 303 STAINLESS

QTY		FSCM NO.		PART NO. IDENTIFYING NUMBER		DESCRIPTION OR NOMENCLATURE		MATERIAL / SPEC / REF DESG		ITEM NO.	
PARTS LIST											
DO NOT SCALE THIS DRAWING UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN BREAK ALL EDGES REMOVE ALL BURRS TOLERANCES ARE: .XXs ANGLES: MAX. FILLETS SURFACE ROUGHNESS				INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100		APVD				NAVAL OCEAN SYSTEMS CENTER SAN DIEGO, CA. 92132	
						CHKD WIER 9/10					
0102 824 HPWC NEXT ASSY USED ON APPLICATION				PROJ. NO. 7ED922C00 COS CODE 8237		PREP WIER 9/10				ROD, SUSPENSION	
						APPROVED FOR					
				REL DATE		BY DIRECTION		SIZE		FSCM NUMBER DRAWING NUMBER	
								SCALE 1:1		UNIT WT. SHEET 1 OF 1	

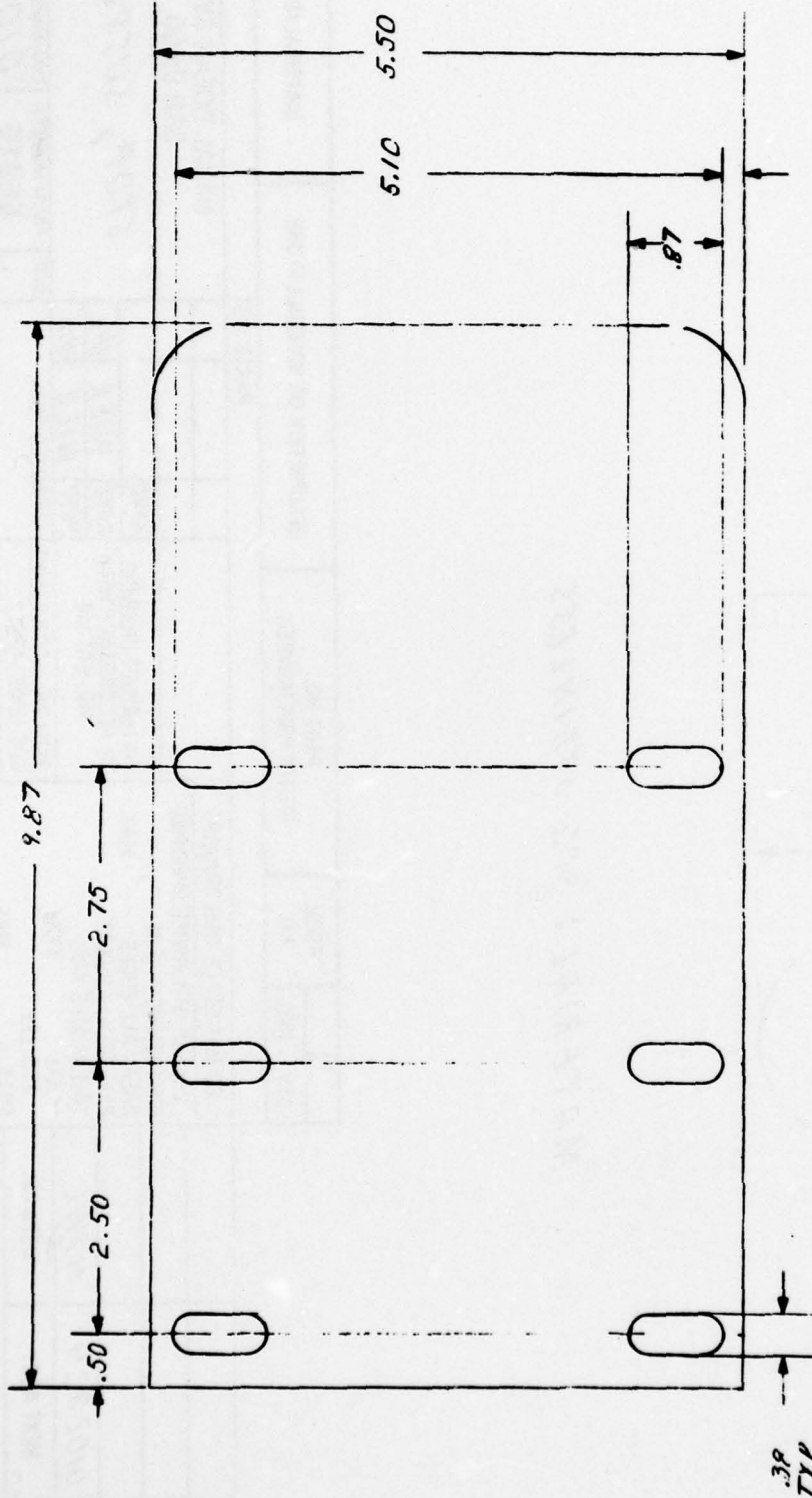
WFO WOSC 200728 (11-77)

THIS PAGE IS BEST QUALITY PRACTICABLE
FROM COPY FURNISHED TO DDC



MATERIAL: 303 STAINLESS

QTY		FSCM NO.	PART NO. IDENTIFYING NUMBER	DESCRIPTION OR NOMENCLATURE		MATERIAL/SPEC/REF. DESG		ITEM NO.
				PARTS LIST		NAVAL OCEAN SYSTEMS CENTER SAN DIEGO, CA. 92152		
		DO NOT SCALE THIS DRAWING UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN BREAK ALL EDGES REMOVE ALL BURRS TOLERANCES ARE: .XX± ANGLES: FILLETS SURFACE ROUGHNESS		APVD CHKD PREP		WIER #/0 WIER #/0		
0102824		H PWC		INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100		STOP, SUSPENSION		
NEXT ASSY		USED ON		PROJ. NO. (E09822AD) COG CODE 8237		SIZE FSCM NUMBER DRAWING NUMBER 55910 0102838-1		
APPLICATION				REL DATE		SCALE 1:1 UNIT WT.		SHEET 1 OF 1

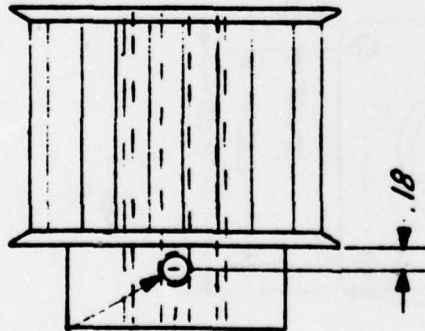
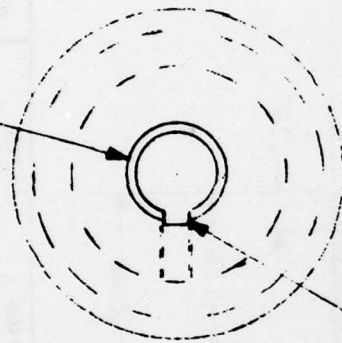


QTY	REQ	FSCM NO.	PART NO IDENTIFYING NUMBER	DESCRIPTION OR NOMENCLATURE	MATERIAL/SPEC/REF DESG	ITEM NO.
DO NOT SCALE THIS DRAWING UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN BREAK ALL EDGES REMOVE ALL BURRS TOLERANCES ARE: XXLg ANGLES: FILLETS SURFACE ROUGHNESS			PARTS LIST		NAVAL OCEAN SYSTEMS CENTER SAN DIEGO, CA. 92152	
INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100			APVD CHKD PREP		PLATE, MOTOR MDUNT	
PROJ NO. 607822A07 COC CODE B233			APPROVED FOR		SHEET FSCM NUMBER 55910	DRAWING NUMBER D102839-1
REL DATE			BY		SCALE: 1:1	SHEET 1 OF 1
APPLICATION			NEXT ASSY		USED ON	
D102823			HPWC			

MATERIAL: .12 THICK
AL ALLOY PLT.

SILVER SOLDER A 3/4 OD
X 5/16 ID SLEEVE

1/4-20 UNC-2B
THIS SIDE



ALTERED ITEM

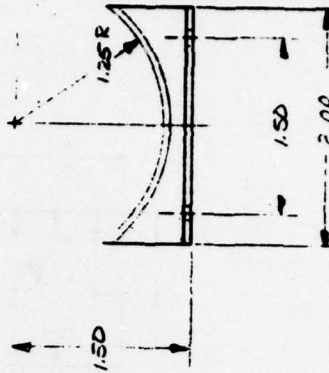
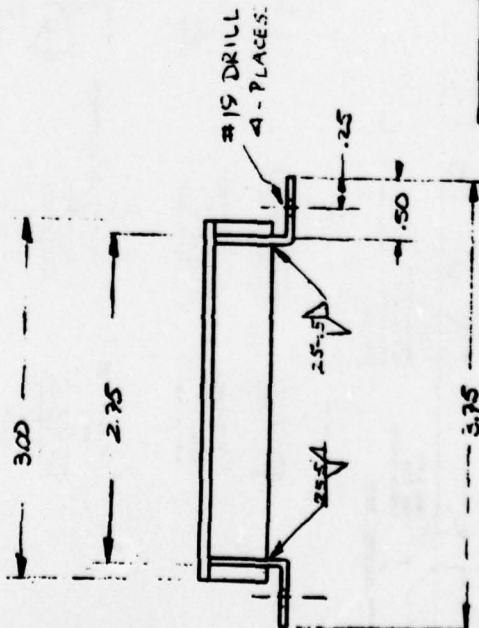
CUT 1/16 STANDARD KEYWAY

QTY		FSCM NO.	PART NO. IDENTIFYING NUMBER	DESCRIPTION OR NOMENCLATURE	MATERIAL/SPEC/REF DESG	ITEM NO.
					NAVAL OCEAN SYSTEMS CENTER SAN DIEGO, CA. 92152	
					PULLEY, SMALL COGGED	
				APVD		
				CHKD	WIER	1/10
				PREP	WIER	1/10
				APPROVED FOR		
				BY DIRECTION		
				SCALE 1:1 UNIT WT.		
				SHEET 1 OF 1		
				SIZE FSCM NUMBER DRAWING NUMBER		
				55910 0102840-1		
				PROJECT NO. 0102840-1		
				COS CODE 0233		
				REL DATE		
				DO NOT SCALE THIS DRAWING		
				UNLESS OTHERWISE SPECIFIED:		
				DIMENSIONS ARE IN MAX.		
				BREAK ALL EDGES		
				REMOVE ALL BURRS		
				TOLERANCES ARE:		
				XX _s XX _s		
				ANGLES: MAX.		
				FILLETS		
				SURFACE ROUGHNESS		
				APPLICATION		
				NEXT ASSY		
				HPWC		
				USED ON		
				0102823		

11403 MODC 20-0/20 (11-77)

THIS PAGE IS BEST QUALITY PRACTICABLE
FROM COPY FURNISHED TO DDC

MAT'L .063 ALUMINUM 6061-T6



QTY REQ		FSCM NO	PART OR IDENTIFYING NUMBER	DESCRIPTION OR NOMENCLATURE	MATERIAL / SPEC / REF DESG	ITEM NO.
PARTS LIST						
		INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100		APVD	NAVAL OCEAN SYSTEMS CENTER SAN DIEGO, CA. 92152	
		PROJ NO. 0102852-1		CHKD	CRADLE MOTOR	
		COG CODE 0233		PREP	WIER 910	
		REL DATE		APPROVED FOR	SCHRAMM 410	
		DO NOT SCALE THIS DRAWING		FSCM NUMBER 55910		
		UNLESS OTHERWISE SPECIFIED:		DRAWING NUMBER 0102852-1		
		DIMENSIONS ARE IN		SIZE		
		BREAK ALL EDGES MAX		SCALE		
		REMOVE ALL BURRS		UNIT WT		
		TOLERANCES ARE:		BY DIRECTION		
		XX ±		SHEET 1 OF 1		
		ANGLES ±				
		FILLETS MAX				
		SURFACE ROUGHNESS				
0102851		H/PW/C				
NEXT ASSY		USED ON				
APPLICATION						

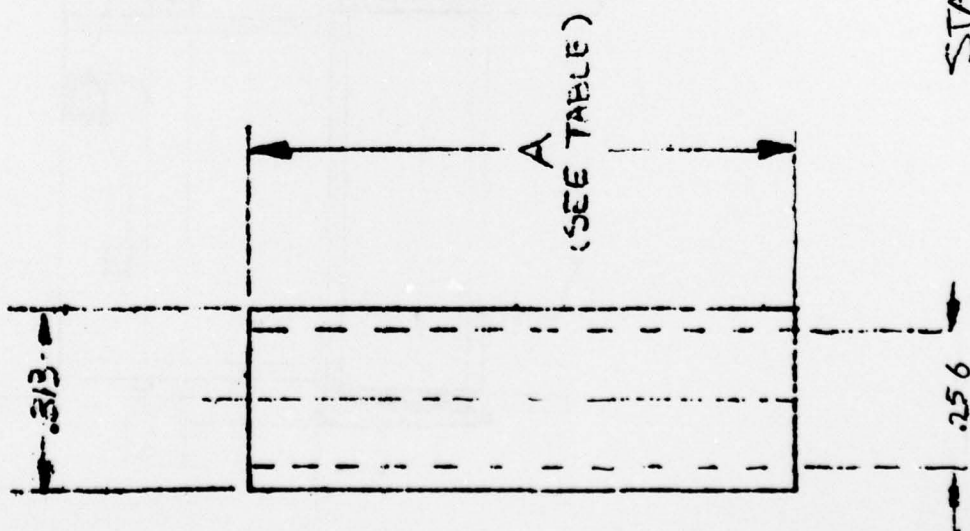
RA SCLAMM

4-6-78

CHKD gator. 9/10/78

THIS PAGE IS BEST QUALITY PRACTICABLE
FROM COPY FURNISHED TO DDC

A	QUANTITY	MATERIAL
.395	8	5/16 O.D.
.875	4	DUNA STEEL
1.375	8	TUBE
1.500	12	22 Ga. WALL X .25 ID



STANDOFFS

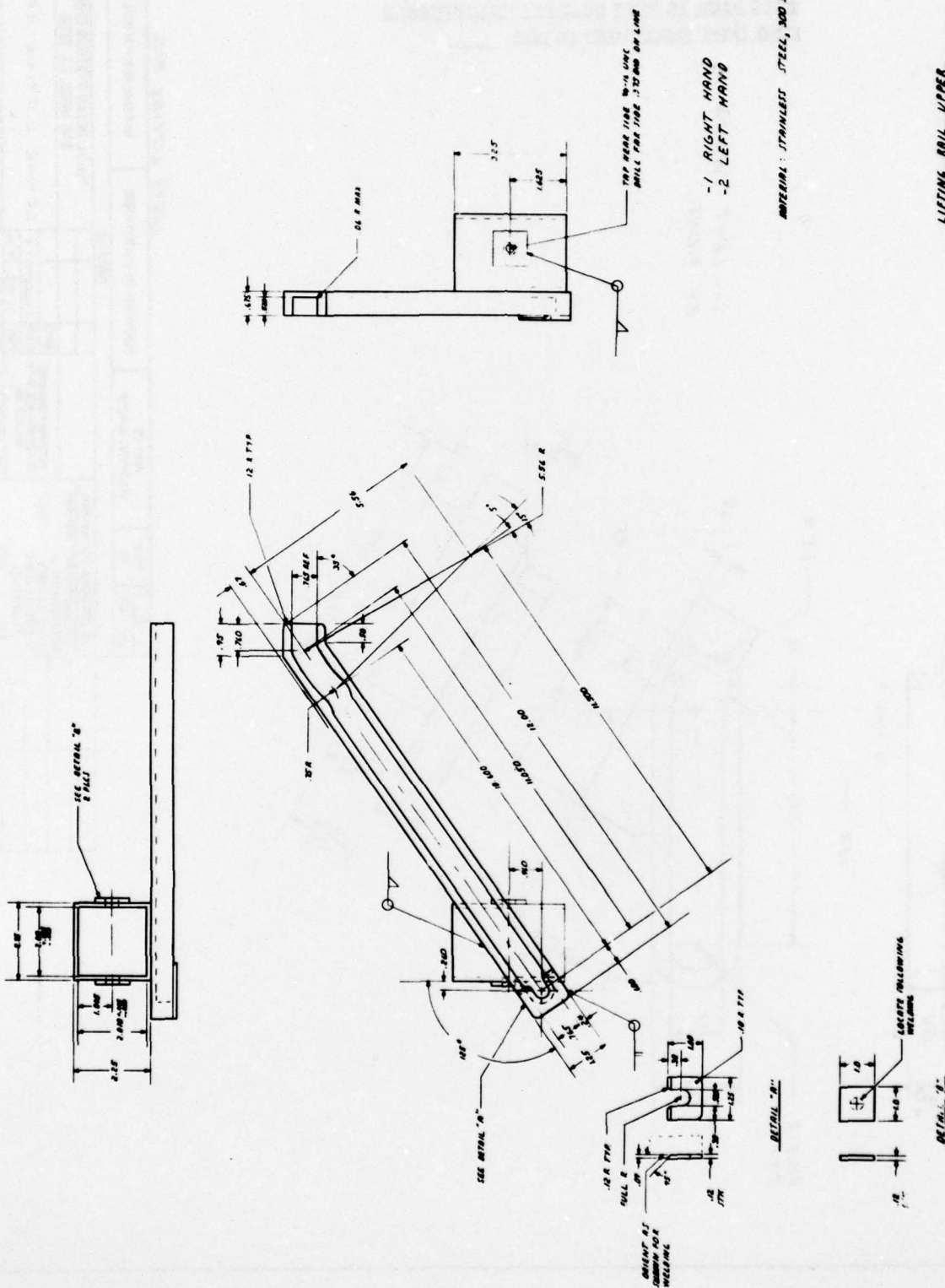
FSCM DWG# 0102853-1

**THIS PAGE IS BEST QUALITY PRACTICALLY
FROM COPY FURNISHED TO DDC**

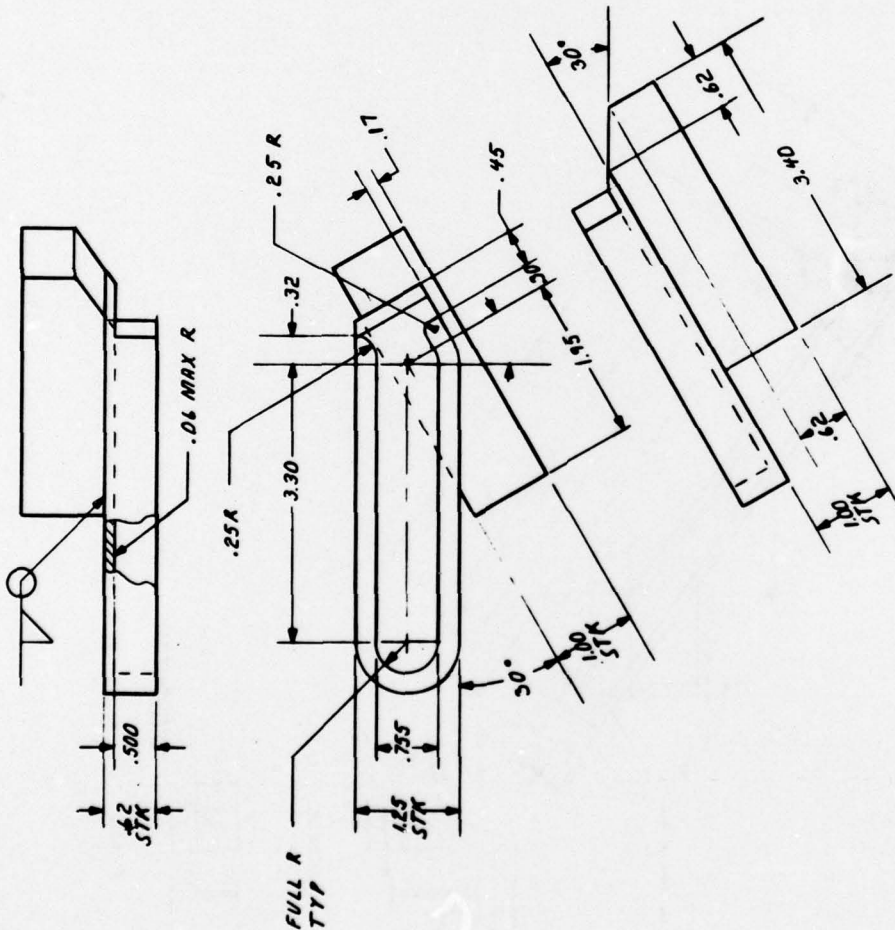


-1 RIGHT HAND
-2 LEFT HAND

MATERIAL: STAINLESS STEEL, 300 SERIES

[illegible]

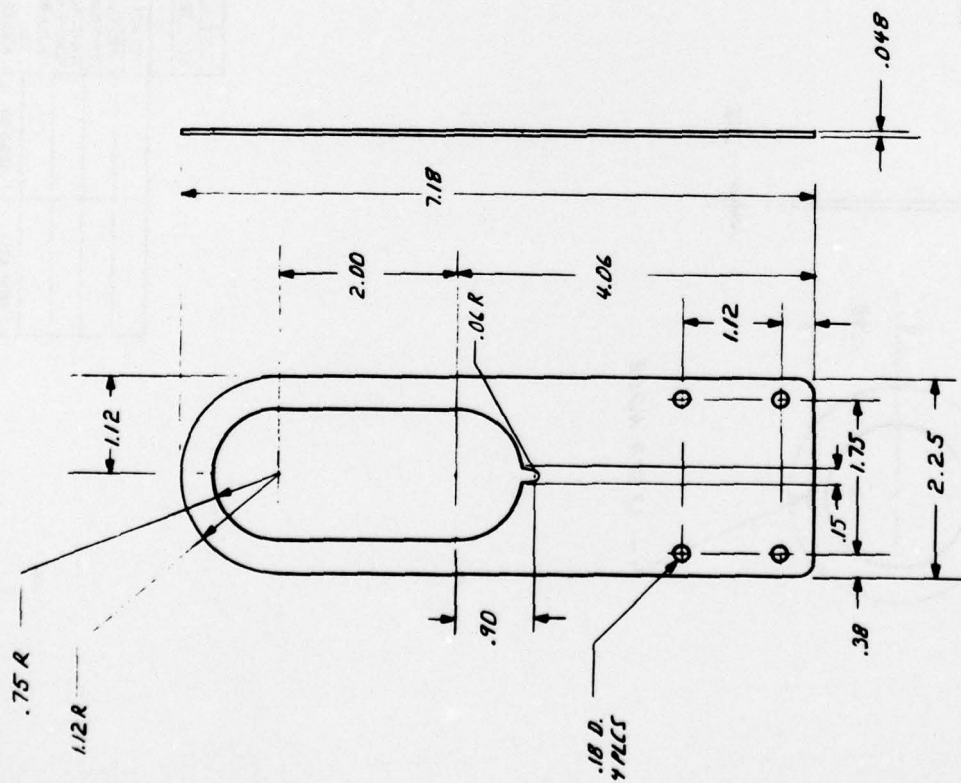
1- LEFT SHOWN
2- RIGHT



LOWER LIFTING RAIL

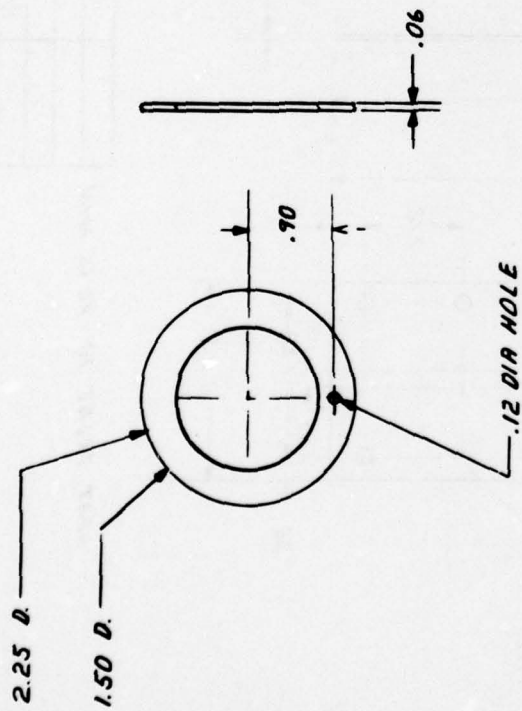
CITY	NO.	FIRM NO.	PART NO IDENTIFYING NUMBER	DESCRIPTION OR DISCREPANCY	MATERIAL APPROVED DATA	FORM NO.
PARTS LIST						
DO NOT SCALE THIS DRAWING UNLESS OTHERWISE SPECIFIED:			NAVAL OCEAN SYSTEMS CENTER SAN DIEGO, CA 92160			
DIMENSIONS ARE IN BREAK ALL DIMS RESERVE ALL DIMS TOLERANCES ARE XLS XCLs XLS ANGLES PALLETS			INTERPRET DIMENSIONS IN ACCORDANCE WITH MIL STD-883 APPROVED FOR DATE REL DATE			
NEXT ASBY USED ON			LOWER LIFTING RAIL			
APPLICATION			SCALE UNIT WT PART 1 2			

MATERIAL: STAINLESS STEEL
420



HEAT TREAT TO RC 65 MIN

[illegible]



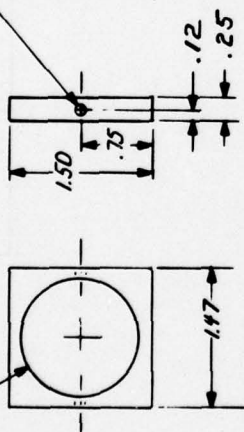
MATERIAL: NYLON (DELRITM)

BEARING, CONNECTOR

QTY	REQ	FSCM NO	PART NO. IDENTIFYING NUMBER	DESCRIPTION OR NOMENCLATURE	MATERIAL/SPEC/REF DESG	ITEM NO
					NAVAL OCEAN SYSTEMS CENTER SAN DIEGO, CA 92152	
				APPROVED FOR	BEARING, CONNECTOR	
				INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100	50010	0103962
				PROJ NO. 401 P 2740 COS CODE 9233	50010	0103962
				DO NOT SCALE THIS DRAWING UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES BREAK ALL EDGES REMOVE ALL BURRS TOLERANCES ARE: X10 ANGLES: X10 FILLETS: MAX SURFACE ROUGHNESS	50010	0103962
				USED ON		
				APPLICATION		
				BY	SCALE	SHEET 1 OF 1

1.25 DIA HOLE CENTERED

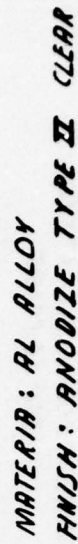
.12 DIA HOLE CENTERED



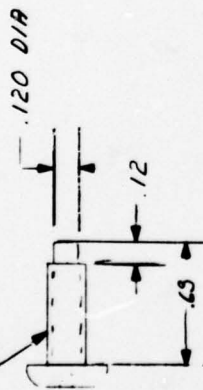
MATERIAL: STAINLESS STEEL
300 SERIES

COLLAR, CONNECTOR

QTY		FSCM	PART NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL/SPEC/REF DESG	ITEM NO.
REQ		NO.	IDENTIFYING NUMBER			
PARTS LIST						
					NAVAL OCEAN SYSTEMS CENTER SAN DIEGO, CA. 92132	
					COLLAR, CONNECTOR	
					APPROVED FOR	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	
					REL DATE	
					PROJECT NUMBER	
					88010	
					UNIT WT.	
					SCALE	
					BY	
					DATE	

1ND MOBC 3010/70 (11-77)

PAN HEAD SCREW 10-32 UNF



MODIFIED PART

THIS PAGE IS BEST QUALITY PRACTICABLE
FROM COPY FURNISHED TO DDC

PIVOT PIN, CONNECTOR

QTY		FSCM	PART NO	DESCRIPTION OR NOMENCLATURE	MATERIAL/SPEC/REF DESG	ITEM
REQ	NO	NO	IDENTIFYING NUMBER			NO
PARTS LIST						
DO NOT SCALE THIS DRAWING UNLESS OTHERWISE SPECIFIED			NAVAL OCEAN SYSTEMS CENTER SAN DIEGO, CA 92152			
DIMENSIONS ARE IN BREAK ALL EDGES REMOVE ALL BURRS TOLERANCES ARE XXS ANGLES: FILLET SURFACE ROUGHNESS			PIVOT PIN, CONNECTOR			
MAX			APVD			
MAX			CHKD GAB2277 9/21			
MAX			PREP WIE 9/20			
MAX			APPROVED FOR			
MAX			SIZE FSCM NUMBER DRAWING NUMBER			
MAX			55910 2103965			
MAX			REL DATE			
MAX			BY DIRECTION			
MAX			SCALE			
MAX			UNIT WT.			
MAX			SHEET 1 OF 1			
MAX			APPLICATION			
MAX			NEXT ASSY			
MAX			USED ON			
MAX			-222C			